In Phillips, et al. (1997) 650 undergraduates viewed a videotaped robbery. Participants were significantly more likely to select a bystander from a photoarray than the actual perpetrator and were more confident in their misidentifications of the bystander. Participants shown a photoarray without the bystander were over six times more likely to select the perpetrator than participants shown an array that included the bystander.

When participants saw a similar film showing both the bystander and the perpetrator for a few seconds in the same frames of the video the majority of participants correctly selected the perpetrator rather than the bystander (by a ratio of 3:1)--but among those who made a misidentification, the bystander was selected more often than chance (.34 vs .20),

In our 2006 meta-analysis Deffenbacher, Bornstein and I reviewed eight studies using these types of designs and found that the effect is a reliable one with an overall transference misidentification rate of 27% for previously-seen bystanders versus 17% for the same individuals when they had not been viewed as bystanders.

Desmarais & Read's (2010) meta-analysis of lay respondents' knowledge of eyewitness issues indicates that 68% of laypersons thought unconscious transference impacted identification performance, but Benton et al. (2006) reported that 30% of American respondents held that belief. In either event these results mean there is still substantial disagreement among laypersons about the impact that unconscious transference can have on identification performance—eyewitness expert testimony would provide jurors with scientifically-grounded guidance on this issue and, as detailed above, increase juror sensitivity to the effects of unconscious transference.

Second Identification Attempts

In a study of the suggestibility of showups, Dickinson (2006) found—in line with the mugshot exposure effects noted above, that when an innocent suspect appears in both a showup and a lineup, the chances the suspect will be identified increases substantially. Indeed, merely telling a witness that he/she will have a chance for a second viewing may be sufficient to affect the accuracy of the identification (Duckworth & Kreiner, 2009). In that study the researchers manipulated whether participants were informed that they would have a second chance to view a sequential lineup via a randomly-ordered lineup (administered on a compute) versus a control condition in which participants viewed the lineup only once. Participants who were *not told* they would have a second viewing made more correct identifications of the perpetrator and made fewer incorrect rejections of the lineup.

In related study, Godfrey & Clark (2010) conducted an experiment measuring the effects of multiple identification procedures when the time between the first and second attempted identification was one week. Following the viewing of a robbery video, witnesses were asked to write down anything they could remember about the crime and the perpetrator together with their confidence in their ability to identify the perpetrator. Witnesses were then shown either a photo showup or participated in a filler task. Witnesses returned the following week and were shown either a guilty-suspect or innocent-suspect lineup. There was an increase in both correct and false identifications from showup to lineup, but no change in foil identifications. Suspects (both guilty and innocent) were more likely to be identified in multiple identification procedures but the identifications *had little probative value*. Witness confidence was not a reliable indicator of eyewitness accuracy.

In a more recent study (Steblay, Tix, & Benson, 2013) participants watched a crime video crime and were asked to identify the perpetrator from perpetrator-present and –absent lineups of the same format (sequential or simultaneous), with a two-week time period between the two lineups. Participants who made choosing errors in the first lineup continued with, rather than corrected, their identification error at the second lineup. There was no difference in confidence between those who made correct and false identification—though choosers were significantly more confident than non-choosers.

A related issue is whether witnesses are given an opportunity to see all the photos in a sequential lineup more than once. Horry, Brewer, Weber and Palmer (2015) tested the effects of two "laps" (either optional or required—the latter is the practice in the UK) in a sequential lineup on witness' identification decisions. Choosing rates for both fillers and perpetrators increased in the second lap (40% changed their original response--mostly from nonidentification to positive identifications-- but identification accuracy did not differ as a function of number of laps. However, Abraham (2012) found overall accuracy was higher when witnesses viewed each mugshot once (47.6%), compared to twice (19.7%) and one viewing was better than two laps accompanied by a warning about the potential negative impact of multiple viewings (31.1%).

The Effects of Suggestive Identification Procedures

The potency of suggestive identification procedures is well–illustrated by research methods designed to encourage witnesses to make selections of someone—even from perpetrator-absent arrays. Luus & Wells (1994) – in an early study of confidence-malleability (see extended discussion below) – illustrate the problem:

> We held constant the accuracy of subject-witnesses' identification decisions by creating false identifications for nearly 100% of all subject-witnesses (obtained rate = 97%). ... The methodology for obtaining false identification rates at or near 100% derives easily from prior treatments of eyewitness identification (see Wells, 1993; Wells, Luus, & Windschitl, in press). ...the only accurate decision (i.e., "not there") was not explicitly presented as an option, and a strong implication was planted in the situational context that the culprit was among the lineup members (Malpass & Devine, 1984). (pp. 715-716)

Eyewitness identifications take place in a social context in which the eyewitness's performance can be influenced by *his or* her expectations and inferences, which in turn can be influenced by the verbal and nonverbal behaviors of investigators, the structure of the identification test and the environment in which the identification test is conducted. At the outset, the fact that the investigator has taken the time to put together a photoarray, made an appointment with the eyewitness and driven across town to meet her may suggest to the eyewitness that the police think they have the perpetrator. This is likely to be so even if the police are unsure about whether the suspect is the perpetrator. For example, the police might be conducting a photoarray identification test as a "shot in the dark" or in order to eliminate a suspect. But there would be no reason for an eyewitness to know this and he or she may be inclined to think that the police are reasonably certain that they know the identity of the perpetrator. It is reasonable to expect that the eyewitness will be motivated to act on this inference and make a positive identification--whether correct or incorrect.

The tendency to make a positive identification may be further strengthened by a number of factors. One such factor is the degree to which the investigator pressures or encourages the eyewitness into participating in an identification test. An eyewitness who is told that it is very important for her to view a photoarray or lineup immediately is more likely to infer that the investigators have identified the perpetrator than is an eyewitness who is told that she could drop by the station whenever it is convenient for her. Another factor might be the zealousness of the investigator. The more zealous the investigator, the more confident the eyewitness might be that the investigator knows the perpetrator's identity. A cooperative eyewitness might therefore "do her part" by making a positive identification. While there is limited research testing hypotheses concerning the effects of effort exertion and zealousness on the part of investigators [Phillips, et al., 1999], if these factors operate as described, we would deem them suggestive procedures for the reasons described below.

Suggestive procedures are aspects of the identification test that are under the control of police investigators and that enhance the likelihood that an eyewitness will make a positive identification--whether it is correct or not. The criminal justice system acknowledges that mistaken identifications occur and that suggestive identification procedures used by police or prosecutors enhance the likelihood of mistaken identifications. Said Supreme Court Justice William Brennan, writing for the majority in *U.S. v. Wade* (1967), "The vagaries

of eyewitness identification are well-known; the annals of criminal law are rife with instances of mistaken identification . . . A major factor contributing to the high incidence of miscarriage of justice from mistaken identification has been the degree of suggestion inherent in the manner in which the prosecution presents the suspect to witnesses for pretrial identification. ... Suggestion can be created intentionally or unintentionally in many subtle ways."

Lineup Instruction Bias

It is not clear from police reports or trial transcripts whether witnesses were given any cautionary instructions prior to attempting their identifications.

The largest body of research relating suggestive procedures is research on the effect of instructions designed to offset witness expectations that they are going to see the perpetrator in an identification procedure. to Instructions given to an eyewitness prior to an identification test can vary in their degree of suggestiveness. Suggestive instructions strongly convey to the eyewitness the impression that the suspect is in fact in the photoarray or lineup, thereby increasing the likelihood that the eyewitness will make a positive--though not necessarily correct--identification. How can instructions convey this message? The following experiments examine this question empirically.

Buckhout, Figueroa & Hoff (1975) examined the influence of suggestive instructions combined with suggestive presentations of a photoarray. Subjects who received "high-biased" instructions and viewed a "leading photoarray," identified the assailant at a significantly higher rate[0] (61.3%) than subjects in the remaining three conditions (which averaged about 40%). In short, this experiment demonstrates that suggestive instructions combined with a leading photoarray can lead to higher rates of identification.

Malpass & Devine (1981a) staged an act of vandalism during a lecture to about 350 undergraduate students, 100 of whom were asked to identify the vandal from one of two live lineups within the next three days. Half of the eyewitnesses were given instructions suggesting the perpetrator was in the array and the remaining eyewitnesses were given an "unbiased" instruction: "The person . . . may be one of the five individuals in the lineup. It is also possible that he is not in the lineup." Among eyewitnesses who viewed a vandal-absent lineup, 78% of those who received biased instructions made a positive identification. Of course, all of whom were incorrect. In contrast, only 33% of those who received unbiased instructions made an incorrect positive identification from the vandal-absent lineup. Thus, significantly more false identifications were obtained with biased instructions than with neutral instructions.

Cutler, Penrod & Martens, (1987a) tested instructions that are more subtly suggestive. As in Malpass & Devine (1981a), when the thief was absent from the lineup, eyewitnesses who received biased instructions were significantly more likely to make a false identification (90%) than were eyewitnesses who received unbiased instructions (45%). The effects of subtly biased instructions were examined in three additional experiments (Cutler, Penrod & Martens, 1987b; Cutler, Penrod, O'Rourke & Martens, 1986; O'Rourke, Penrod, Cutler & Stuve, 1989). Overall, there was strong evidence for the influence of suggestive instructions on false identifications in data from 895 participants in crime simulation experiments.

Instruction bias research was reviewed by Steblay in a 1997 meta-analysis in which she cumulated the results of 22 different experimental studies [in 18 different papers] of the effects of biased instructions involving nearly 2600 witness-participants. She found that biased instructions were particularly harmful in target-absent lineups in which witness accuracy declined from 60% (unbiased lineups) to 35% (biased lineups). Strikingly, the magnitude of the biasing effect was just as large when witnesses were simply not given a "don't know" or "not present" option as it was when instructions also included some pressure to make a selection.

Quinlivan et al. (2012) manipulated pre-admonition suggestions and cautionary instructions. That is, in addition to manipulating whether witnesses received biased or unbiased instructions, Quinlivan et al. manipulated whether, before the instructions, the lineup administrator suggested the perpetrator was likely to be in the lineup (i.e., "I could really tell you were paying a lot of attention; surely you are going to be able to pick the person out of the lineup"). When instructions were unbiased, there was an increase in false identifications and choosing rates among witnesses who received the pre-admonition suggestions compared to no pre-admonition suggestions (Quinlivan et al.). The study demonstrate that unbiased instructions are more effective than biased instructions, but only if the administrator refrains from suggesting that the perpetrator is in the lineup--unbiased lineup instructions may only work when the administrator does not make statements contradicting the instructions.

In conclusion there is convincing evidence that suggestive identification instructions influence eyewitness performance. The research shows that suggestive instructions substantially increase the likelihood of false identifications. Indeed, The 1999 National Institute of Justice "Eyewitness Evidence A Guide for Law Enforcement" (http://www.ncjrs.gov/pdffiles1/nij/178240.pdf) recommends that officers Instruct the witness that the person who committed the crime may or may not be in the set of photographs being presented." Similar instructions are recommended for showups and live lineups.

Desmarais & Read's (2010) meta-analysis of lay respondents' knowledge of eyewitness issues reported that 71% of their respondents understood that instructions influence performance (41% in Benton, et al.). As with the other factors discussed above, this means there is significant disagreement among laypersons about the impact that this factor has on witness confidence—eyewitness expert testimony would provide jurors with scientifically-grounded guidance on this issue.

Non-Blind Presentation

As noted above, the 22-suspect array presented to Desiree Scroggins appears to be a "blind" presentation in the sense that Detective Deloren did not have a specific suspect in mind—however, once Desiree indicated that Mr. Nolen looked like the robber, Detective Deloren arguably did have a particular suspect in mind when he presented photographs to Lorraine Scroggins.

Concern has been expressed about the fact that identification procedures are conducted "non-blind"—that is, the administering officers know who the suspect is. Psychological and medial researchers have completely abandoned non-blind research out of fear that research participants will be unwittingly influenced by researchers who unwittingly communicate their expectations (e.g., about the effectiveness of a new test medicine). Can witnesses be influenced by administrators who know the identify of the suspect? The first study to examine the influence of administrator knowledge paired mock line-up administrators with mock witnesses who had previously viewed a live, staged crime involving two perpetrators (Phillips et al., 1999). Phillips and colleagues manipulated whether the administrator knew the identity of the suspect, the type of lineup presented (simultaneous vs. sequential), as well as the presence of an observer during the line-up task. When the line-up was presented sequentially and an observer was present, administrator knowledge influenced witnesses to choose an innocent suspect.

Additional support for the effects of line-up administrator knowledge was obtained in research manipulating the level of contact between administrators and witnesses (Haw & Fisher, 2004). For some witnesses, administrators had direct contact with them while administering the line-up. For others, administrators sat behind the witnesses out of their direct view, limiting their ability to communicate cues to the suspect's identity to the witnesses. When the administrator was permitted high contact with the witness and presented a target-absent simultaneous line-up, witnesses were more likely to identify the innocent suspect. In contrast, other studies have failed to find any influence of administrator knowledge on witnesses' identification decisions (Haw et al., 2003; Russano et al., 2006).

Greathouse & Kovera (2009) manipulated whether an administrator had knowledge of the suspect's identity, the type of line-up (simultaneous vs. sequential), the presence of the actual perpetrator in the line-up and the type of line-up instructions (biased vs. unbiased). When the witnesses received biased instructions and simultaneous line-ups, they were more likely to make suspect identifications in non-blind than in blind lineups. The pattern of filler and suspect identifications suggested that the increase in mistaken identifications was the result of non-blind administrators influencing those who would have, under blind conditions, made filler identifications to make suspect identifications instead. Line-up rejections did not significantly increase or decrease as a function of line-up administrator knowledge. Suspect identifications were twice as diagnostic for blind administrations as they were for non-blind administrations.

In a more pronounced demonstration of the effects that a non-blind administrator can have, Alberts, Duncan, Wallace and Penrod (2008) trained administrators to "steer" witnesses to make positive identifications of suspects (both guilty and innocent suspects) and avoid identifications of non-suspects (foils) and to accomplish this steering without arousing the suspicion of witnesses. Steering was highly successful: selection rates for "steered" witnesses were: 57% guilty suspects, 32% innocent suspects and 19% filler identifications versus 18% guilty suspects, 10% innocent suspects and 39% filler identifications. Witnesses were essentially unaware that they had been influenced. Clark, et al. (2013) used similar procedures and obtained similar results.

Desmarais & Read's (2010) meta-analysis of lay respondents' knowledge of eyewitness issues did not include blind presentation as a factor, nor did Benton et al. (2006). As noted above, research on other factors certainly suggests there will be disagreement among laypersons about the impact that non-blind presentation have on identification performance—eyewitness expert testimony would provide jurors with scientifically-grounded guidance on this issue.

X. Witness Confidence and Witness Accuracy

At trial Sandra Scroggins—who made the first identification of Mr. Nolan, testified:

Q. ...And on that day (January 27, 2014), you said to Detective Deloren Mr. Nolan's photo looks a lot like the robber. Isn't that what you said?
A. The guy in the green sweater, yeah.
Q. But you weren't sure?
A. I wasn't, I wasn't --
Q. When you saw the photo, you weren't sure?
A. I, not that I wasn't sure. I wasn't positive, but I was about 75, maybe 80 percent sure it was him.
Q. Yesterday, you said it was 75 percent sure?
A. I said 75, 80 percent sure it was him. (p. 169)

A Complaint Form with an activity date of 1/27/14 merely indicates Lorraine Scroggins, "positively identified Ralph Nolan as one of the perps that entered her apartment and robbed her." At trial she asserted she was "A hundred percent" confident (p. 564)

The communication among witnesses and the viewing of the Facebook photos of Mr. Nolan, all noted above, cast doubt on the robustness of the confidence statements made by Mr. and Ms. Martinez.

The problems with respect to witnesses' confidence about the accuracy of their identifications and the actual accuracy of those identifications are manifold. Some of these problems relate to juror use of witness confidence and some relate to the weakness of the association between confidence and accuracy (CA). Witness confidence can be influenced by post-identification factors such as repeated questioning, briefings in anticipation of cross examination, and feedback about the behavior of other witnesses. Jurors over-believe eyewitnesses, have difficulty reliably differentiating accurate from inaccurate eyewitnesses, and (as detailed

below) are not adequately sensitive to aspects of witnessing and identification conditions. A major source of juror unreliability is reliance on witness confidence. Juror reliance on witness confidence appears to be unaffected by traditional safeguards such as cross-examination and judges' instructions in eyewitness cases.

Although there is a presumption among many actors in the legal system that there is a positive confidence—accuracy relation, serious questions about whether that is true at the trial stage have been raised by researchers within the law-psychology community. These issues were discussed in some detail in a 1998 Whitepaper I co-authored with several colleagues (Wells, et al, 1998) and I have excerpted portions of that paper here:

Surveys Show that Most People Believe Confidence is Diagnostic of Accuracy. Based on survey techniques, it is clear that people believe that there is a strong relation between eyewitness identification confidence and eyewitness identification accuracy (Brigham & Bothwell, 1983; Brigham & Wolfskiel, 1983; Deffenbacher & Loftus, 1982; Rahaim & Brodsky, 1982). Similar findings have been reported in Canada (Yarmey & Jones, 1983), Germany (Sporer, 1983), Australia (McConkey & Roche, 1989) and England (Noon & Hollin, 1987).

Jurors Infer Accuracy from Confidence. There is consistent evidence to indicate that the confidence that an eyewitness expresses in his or her identification during testimony is the most powerful single determinant of whether or not observers of that testimony will believe that the eyewitness made an accurate identification (e.g., see Cutler, Penrod & Dexter, 1990; Leippe & Romanczyk, 1987, 1989; Leippe, Manion, & Romanczyk, 1991; Lindsay, Wells, & O'Connor, 1989; Lindsay, Wells, & Rumpel, 1981; Turtle & Wells, 1988; Wells, Ferguson, & Lindsay, 1981; Wells, Lindsay, & Ferguson, 1979; Wells & Murray, 1984).

Overall, it is clear that jurors do rely on witness confidence as an indicator of witness accuracy—even when, circumstances do not support such reliance.

To what extent does witness confidence predict identification accuracy? Should jurors (and attorneys and judges) rely so heavily on witness confidence as a guide to witness accuracy?

Pre-identification Confidence Reveals Little about Identification Accuracy. Cutler & Penrod (1989a) examined nine studies testing the relation between pre-identification confidence and identification accuracy. Across nine studies the pre-identification confidence-accuracy correlation ranged from .00 to .20--which indicates that pre-identification is a poor predictor of identification performance.

Post-Identification Confidence, if Measured Properly, is Modestly Correlated with Accuracy. Over the past 35 years researchers have examined the results from the growing numbers of studies that measure both witness accuracy and witness post-identification confidence in an effort to arrive at a reliable estimate of the magnitude of their relation. Deffenbacher (1980) concluded that there was little support for a strong reliance on witness confidence as a guide to witness accuracy. In a review of 31 studies Wells & Murray (1984) reported an average r=.07. Bothwell, Deffenbacher, & Brigham (1987) meta-analyzed 35 studies involving staged incidents that yielded an average confidence and accuracy correlation of r=.25. Perhaps the most informative study is by Sporer, Penrod, Read & Cutler (1995) who found a confidence-accuracy correlation of .41 among (forensically-relevant) choosers. These finding suggests that witnesses who are highly confident in their identifications are somewhat more likely to be correct as compared to witnesses who display little confidence.

But, Witnesses are Over-Confident. Though confidence-accuracy correlations are sometimes relatively high, most research yields relatively low correlations. Some have argued that despite the generally weak confidence-accuracy correlation, accuracy may be very high among the most confident witnesses. One analytic method that addresses this question uses calibration methods which measure peoples' confidence on a percentage scale (0, 10, 20, 30% and so on--not that this is not what the police do), then clumps people

together at different levels of confidence to assess their accuracy. In what is probably the first published eyewitness study using calibration methods, Cutler and Penrod (1989) found witness overconfidence of 10-20% (that is, witnesses were making 10-20% more errors than their confidence levels indicated).

In a study by Juslin, Olsson and Winman (1996) overconfidence ranged from 10-25%. Similarly, though the published numbers are slightly ambiguous, it looks as though the top 21% most confident witnesses in Brigham, Maass, Snyder, & Spaulding (1982) were 85% correct. Brewer, Keast, and Rishworth (2002) found that eyewitnesses who were very confident of the accuracy of their identifications (95% certain) were only about 70%-75% correct. In a 1987 study by Fleet, Brigham, & Bothwell 75% of Ss who rated themselves as extremely confident were accurate. Brigham (1990) found a 74% accuracy rate for the top 27% most-confident of his witnesses.

Sauer, Brewer & Wells (2008) report some of the most informative results: a 40% error rate among witnesses who make identifications and are 90%-100% confident (only 18% of their witnesses expressed this high level of confidence), a 51% error rate among those who are 70%-80% confident and a 59% error rate among those who were 50-60% confident. In short, although there is some evidence of greater accuracy among those who are more confident, error rates can be high among even the small percentage of most-confident witnesses. Among non-identifying witnesses Sauer, Brewer & Wells (2008) report a similar pattern of improved performance with higher levels of confidence plus overconfidence – they report a 30% error rate among witnesses who make a nonidentification and are 90%-100% confident (21% of their nonidentifying witnesses), a 35% error rate among those who are 70%-80% confident and 42% errors among those who are 50-60% confident.

More recently, Sauer et al. (2010) found that 13% of their witnesses, when tested immediately, made a positive identification with 90-100% confidence—their error rate was 20%. 10% of witnesses to the same events--tested after one week--made identification with 90-100% confidence—their error rate was 25%. Even greater overconfidence was evident in a study by Sucic and colleagues (2015) as shown in the following figure. If the witnesses had been performing perfectly their calibration lines would have overlaid the diagonal reference line. As is evident from the figure neither pre-identification (prospective) nor post-identification (retrospective) confidence was well calibrated and highly confident witnesses were quite substantially over-confident (e.g. a better than 50% error rate for witnesses who were 95% confident about their selections. The authors conclude: "The calibration curve, as well as the values of additional parameters, confirmed correlational findings, which indicated that confidence only weakly postdicts accuracy and that confidence not at all predicts accuracy." (p. 808)
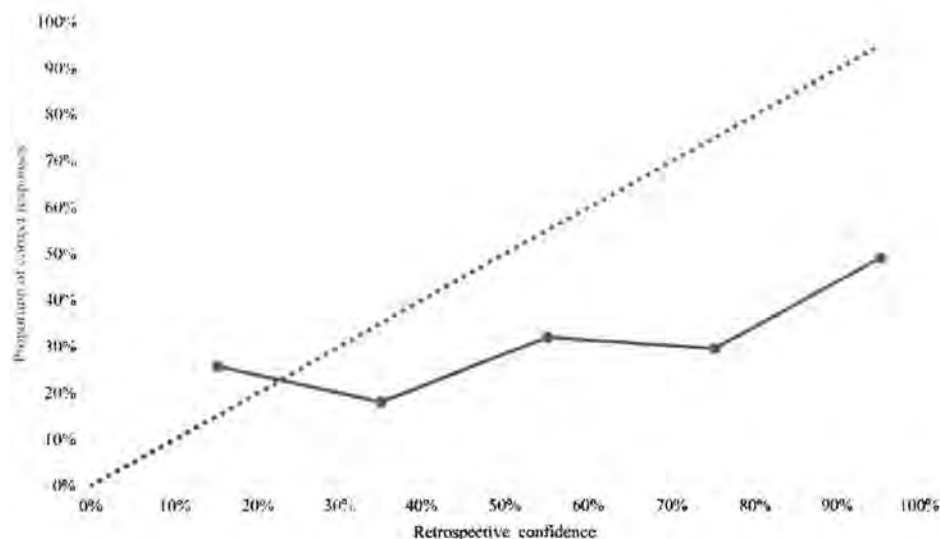
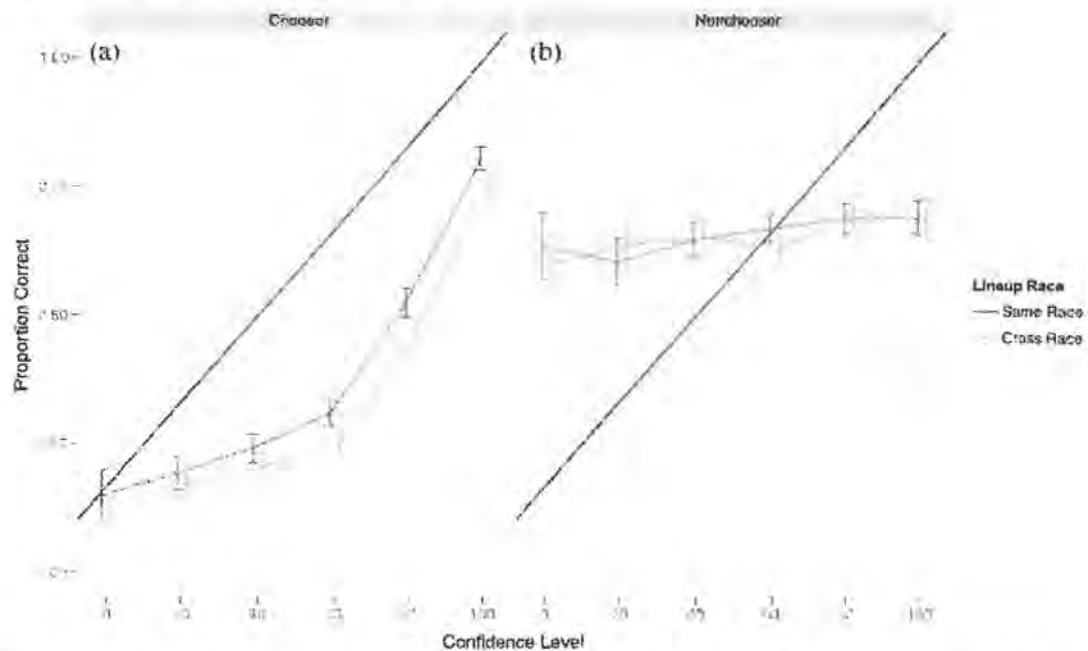Similar results are seen in a study by Dodson, et al. (2015):

Figure 1. Calibration of confidence-level to accuracy for same-race and cross-race lineups when participants either choose a face from the lineup (i.e., Chooser lineup) or respond "not present" (i.e., NonChooser lineup). Error bars represent 95% confidence intervals.

Overconfidence has similarly been demonstrated in memory for events as shown in this figure from Dahl, et al. (2015)
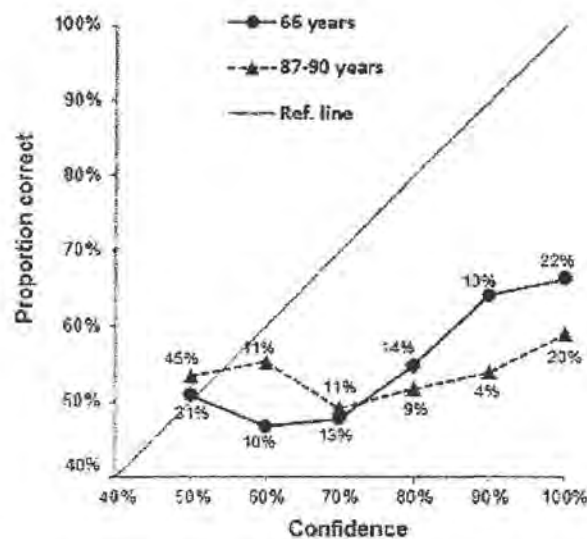

Figure 1. Calibration curves for participants 66 years of age and 87/90 years of age. The numbers next to each point indicate the percentage of responses in that age group that reported this confidence level.

Optimality and Confidence-Accuracy. As early as 1980 Deffenbacher advanced the idea that the confidence-accuracy relationship should be weaker under conditions which promote poor witness performance. Deffenbacher illustrated the effect by comparing the number of studies producing significant

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and non-significant confidence-accuracy relationships as a function of witness performance. Studies which yielded identification accuracy levels of 70% or higher were deemed high in optimality. As shown in the following table, high optimal condition were much more likely to produce a significant confidence-accuracy correlation.

Table 1. Frequency of Research Findings across All Studies[a]

	High optimal conditions	Low optimal conditions
Significant positive accuracy/ confidence relation	13	9
Nonsignificant or reversed accuracy/confidence relation	1	20

Subsequent research has supported Deffenbacher's conclusions. Sporer, Penrod, Read & Cutler (1995) in their meta-analysis reported that: "As the percentages of correct identification decisions in these studies increased, the CA relation also strengthened among choosers (simple $r = .59$).... Thus, when circumstances of encounter permit high quality of encoding, correct identifications will become more likely, and these will more likely be associated with high levels of confidence among choosers." (p. 323).

Olsson (2000) observed: "Earlier studies (e.g., Cutler & Penrod, 1989) found that optimality of encoding conditions affects the CA relation, in particular the calibration score. For instance, in the study by Cutler and Penrod, low optimality conditions (disguised target persons) produced significantly poorer calibration and over-/underconfidence scores. This result is in line with Deffenbacher's (1980) optimality hypothesis, which posits that the CA relation should be lower under poor information-processing conditions. ... the strong covariation observed in this study between task difficulty and calibration and over-/underconfidence, for both earwitnesses and eyewitnesses, is further evidence that the CA relation can vary considerably as a function of encoding and retrieval conditions." (p. 509).

The general point is that these results are consistent with other measures of the confidence-accuracy relation--error rates can be high among even the most confident witnesses.

The Problem Grows Worse--Confidence at Trial may be Useless as an Indicator of Accuracy.. Imagine that prosecutors are skimming only the most confident witnesses; there is no artificial confidence-boosting among the witnesses; and we have reliable measures of confidence, not the vague verbal reports currently obtained by police. Among these highly confident witnesses, the results above indicate that 20 to 30% could be in error. But even if the error rate is only 10% for these highly selected and most confident witnesses, they will all appear highly confident to jurors—so confidence cannot help the jurors figure out which witnesses have made errors. Indeed, the simple correlation between confidence and accuracy for these witnesses will be much worse than among all witnesses, because there is very little variability in confidence and maybe no useful variance.

Though it is tempting to conclude that jurors might be entitled to assume a fairly high base rate of accuracy among these highly confident witnesses (even if confidence cannot aid them in differentiating accurate and inaccurate witnesses), if guilty (and accurately identified) defendants are pleading guilty at higher rates than innocent defendants it would not be safe to conclude that the accuracy rate is fairly high; indeed, the accuracy rate could be fairly low, because the guilty defendants facing confident witnesses have already pleaded guilty.

In short, the research results and logic call into question the notion that witness confidence can be of significant assistance to jurors.

Survey studies clearly that people believe there is a strong relation between eyewitness identification confidence and eyewitness identification accuracy (Brigham & Bothwell, 1983; Brigham & Wolfskiel, 1983; Deffenbacher & Loftus, 1982; Rahaim & Brodsky, 1982). Similar findings have been reported in Canada (Yarmey & Jones, 1983), Germany (Sporer, 1983), Australia (McConkey & Roche, 1989) and England (Noon & Hollin, 1987). Desmarais & Read's (2010) meta-analysis of lay respondents' knowledge of eyewitness issues include confidence-accuracy and they reported that just 40% of their respondents understood that confidence and accuracy are modestly related-- the lowest rate of expert-lay agreement across all the factors included in their analyses. This means there is widespread disagreement among laypersons about the relationship between witness confidence and identification performance—eyewitness expert testimony would provide jurors with scientifically-grounded guidance on this issue

Confidence Malleability

As Wixted, et al. (2015) have observed: "The fact that memory is malleable—that is, that people can be induced to confidently remember events that never happened—has been firmly established by decades of research (see Roediger, 1996). According to our reading of the literature, there is no controversy about this." (p. 216)

Confidence malleability refers to the tendency for an eyewitness to become more (or less) confident in his or her identification as a function of events that occur after the identification. The confidence malleability problem is particularly important because actors in the legal system can contaminate the confidence of an eyewitness in ways that can make an eyewitness's in-court expression of confidence a meaningless indicator of the eyewitness's memory. Unfortunately, an eyewitness's belief that the identified person is the culprit can also arise for reasons other than the eyewitness's memory (Leippe, 1980; Wells, Ferguson, & Lindsay, 1981; Luus & Wells, 1994; Wells & Bradfield, 1998). For example Hastie, Landsman, & Loftus (1978) found that witnesses who were questioned repeatedly grew more confident about the accuracy of details in their reports (see also Shaw, 1996; Shaw & McClure, 1996; Turtle & Yuille, 1994).

Wells, Ferguson, & Lindsay (1981) demonstrated they could increase witness confidence simply by briefing witnesses about the types of questions they might encounter in an upcoming cross-examination. Unfortunately, the briefing effect occurred among inaccurate eyewitnesses, whose levels of confidence rose dramatically, whereas confidence levels among accurate witnesses were unchanged.

In a dramatic illustration of confidence malleability, Luus & Wells (1994) used a staged-crime to secure false identifications from 136 eyewitnesses. These eyewitnesses viewed a theft in pairs and were separated shortly after the theft. After being separated false identifications were obtained from the witnesses using a photospread (the eyewitnesses were unaware they had made a false identification). After making their identifications eyewitnesses were either told nothing about the identification decision of their co-witness or were given information that their co-witness ostensibly identified the same person, identified someone else, or indicated that the culprit was not in the lineup. They were then interviewed by an assistant to the experimenter (posing as a campus police officer) who solicited the witness' confidence levels (on 10-point scales) in the accuracy of their identifications. Each eyewitness was videotaped while giving statements to the police officer.

There were dramatic increases in the confidence that eyewitnesses expressed in their false identifications in the condition in which they were told that their co-witness identified the same person (the average confidence on a 10 pt. scale was 8.8 versus 6.9 in the no-information control condition). The lowest confidence levels were found among witnesses who were told that the co-witness had indicated that the perpetrator was not in the array (3.6). Even broader effects have been shown to emerge when eyewitnesses

are told after their identification that they identified the suspect (versus being told nothing). Wells & Bradfield (1998) also found that eyewitnesses who received confirming feedback were much more confident than the witnesses with no feedback and witnesses with disconfirming feedback. In addition, the confirming feedback witnesses distorted their reports of their witnessing conditions by exaggerating how good their view was of the culprit, how much attention they paid to the culprit's face while observing the event, and so on. Furthermore, Douglas et al. (2010) have shown that witnesses receiving confirming post-identification feedback are viewed by others as more accurate and confident than witnesses who have not received feedback.

Gurney and colleagues (2013) took the malleability research one step farther and tested whether positive or negative non-verbal feedback would affect witness confidence. Participants watched CCTV footage of a crime scene and answered a series of questions. While answering questions the participants given either affirming feedback (a head nod), disconfirming feedback (a head shake) or no feedback. Those presented with affirming non-verbal feedback produced inflated confidence judgments compared with those presented disconfirming non-verbal feedback and this was true regardless of their accuracy.

Smalarz and Wells (2014a) investigated other ways in which confirming feedback can affect identification performance. After participants received either no feedback or confirming feedback the researcher/administrator pretended to have given the witness the "wrong" lineup, and then gave the witness the "correct" lineup. Results indicated that feedback impaired witnesses' ability to identify the culprit in a final memory test (Smalarz & Wells, 2014a). In a second study, Smalarz and Wells (2014b) found that evaluators/jurors could distinguish the accuracy and credibility of witnesses' videotaped testimony when witnesses were not given feedback, but when witnesses received feedback, there were no differences in evaluators' ratings of accuracy/credibility (Smalarz & Wells, 2014b).

Dysart, Lawson, and Rainey (2012) tested whether feedback from administrators who were blind to the identity of the suspect had the same influence on eyewitness confidence as non-blind administrators. Participants in their study watched a video of a crime and were asked to identify the suspect from either a target-present or target-absent array. The researchers manipulated whether the participant witnesses did or did not receive feedback from an administrator who was blind or non-blind. Post-identification feedback had an effect on witness ratings of confidence and other judgments only when witnesses received feedback from an administrator who was in the room during the video (and presumably knew the identity of the perpetrator). There was no effect of feedback on witness ratings when the administrator was not in the room during the video and presumably blind to the perpetrator's identify.

A 2006 meta-analysis by Douglass and Steblay of 20 studies with 2,400 identifications found that witnesses receiving feedback "expressed significantly more . . . confidence in their decision compared with participants who received no feedback. This meta-analysis demonstrated that the effect of confirming feedback was consistent and reliable, with large effect sizes obtained for dependent measures including retrospective certainty, opportunity to view, and attention paid.

The broad impact of confirming feedback was further confirmed in an updated meta-analysis by Steblay, Wells & Douglass (2014) using data from 6,200 witness/participants. Their results are summarized in the following figure which indexes the impact of feedback on various outcomes.
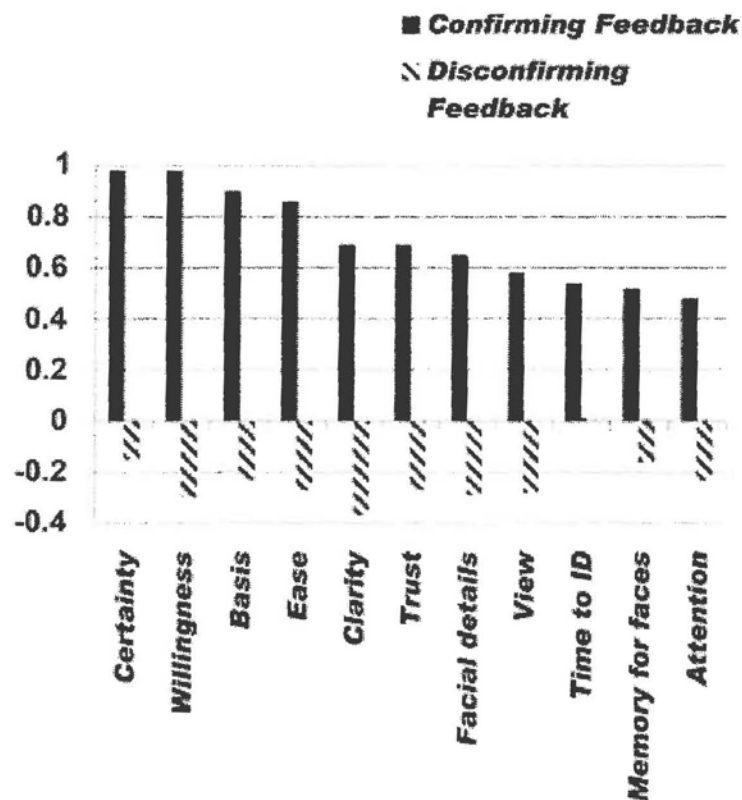
■ *Confirming Feedback*

⩘ *Disconfirming Feedback*

Figure 1. Effect sizes (d): Confirming and Disconfirming Conditions.

Steblay, Wells & Douglass (2014) conclude:

...we now know that witness retrospective memories for crime events and identification procedures are enormously influenced by even well-intentioned feedback from lineup administrators. The primary lesson of the post-identification feedback effect is that only way to know how certain the witness was at the time of the identification—to avoid the appearance of reliability without reliability itself—is to ask the witness about certainty at the time of the identification and prior to the contamination of post-identification influences. Our recommendation to address this problem is for double-blind lineup procedures that secure immediate witness reports of certainty and other testimony-relevant memory factors. We also recommend that identification procedures be videotaped (e.g., Kassin, 1998). Recent research emphasizes the critical importance of having the original confidence statement recorded so that triers of fact can adequately compare it with the (potentially inflated) confidence at trial (Douglass & Jones, 2013). Implementing these recommendations will increase the likelihood that eyewitness reports are probative (cf. Oregon v. Lawson, 2012) rather than reflections of a distorted memory construction process. (p. 16)

A report from the National Academy of Sciences on eyewitness recommends that blind investigators (p. 73) should document witness confidence at the time of initial identifications:

Evidence indicates that self-reported confidence at the time of trial is not a reliable predictor of accuracy. The relationship between the witness' stated confidence and accuracy of identifications may be greater at the moment of initial identification than at the time of trial ... [judges should] take all necessary steps to make juries aware of prior identifications, the manner and time frame in which they were conducted, and the confidence level expressed by the eyewitness at the time" (pp. 74-76).

Similarly, Wixted, et al. (2015) observed:

Because eyewitness confidence on an initial test of memory is diagnostic of guilt (whereas eyewitness confidence on a later memory test may not be), it is important that the police record the initial level of confidence expressed by an eyewitness. ... . Because confidence in the initial ID is the only one we have reason to believe is diagnostically useful, it is the only one that should be given weight. ... (p. 523-524)

Wixted, et al. further note:

In partial agreement with what we are advocating here, Garrett (2012) recently made the following recommendation: "Directing my observations to criminal procedure reformers, I argue that courtroom identifications following prior identifications should be per se excluded" (p. 457). We understand these sentiments but emphasize that **the key factor that should be excluded is the courtroom expression of confidence.** (p. 522, emphasis added)

In a brief article clearly aimed at the police (published in *The Police Chief*) the same authors offer these "Action Items:"

- Be aware that there is only one opportunity to administer a valid test of eyewitness identification, and that opportunity occurs the first time the eyewitness is tested using a show-up or a lineup (whether a live lineup or a photo lineup is used). All subsequent identifications made by the same eyewitness of the same suspect are less valid (these ID tests are analogous to reexamining a contaminated crime scene).
- Because the first identification is the most valid, it is essential to record a certainty statement made by the eyewitness at that time (before providing any feedback to the eyewitness). Recording an initial certainty statement is critical in part because a low-confidence ID, while possibly having probative value (thereby providing useful evidence for obtaining a search warrant, for example), is nevertheless quite error prone (and thus would not be useful evidence for obtaining a conviction on its own). Recording an initial certainty statement is also critical because a high-confidence ID, while not necessarily being correct (initial high-confidence errors do occur), is typically associated with high accuracy. (pp. 14-15)

Desmarais & Read's (2010) meta-analysis of lay respondents' knowledge of eyewitness issues reported that 59% of their respondents understood that witness confidence can be influenced by factors unrelated to witness accuracy. As with the other factors discussed above, this means there is significant disagreement among laypersons about the impact that these factors have on witness confidence—eyewitness expert testimony would provide jurors with scientifically-grounded guidance on this issue.

XI. Cumulative Impact of Threats to Reliability

I have enumerated a large number of factors which have been linked to eyewitness reliability in research and are involved in this case. A strong case can be made that these factors can cumulatively increase identification errors. There is also evidence that the studies reported here typically underestimate the effects of these factors on performance? Are the effects these factors cumulative or does the presence of one factor make the others irrelevant?

Generalizability of Effects

Shapiro & Penrod (1986) noted that in the studies in their meta-analysis overall performance levels were worse in more realistic eyewitness studies higher in the laboratory studies and that those differences were readily accounted for by systematic differences between more and less realistic studies. Lindsay and Harvie (1988) reported a similar pattern: less-realistic studies appear to systematically over-state levels of witness performance. There is other evidence (see Penrod & Bornstein, 2007 for an overview) that less realistic studies understate the impact of studied variables on witness performance. This evidence emerges from meta-analyses in which researchers have tested whether the effect of the factor that is the main focus of the meta-analysis is larger or smaller under more realistic testing conditions. There are many such demonstrations.

Steblay's (1992) meta-analysis of the weapon focus effect similarly showed that relatively artificial simulations *underestimated* the magnitude of the effect. Deffenbacher, Bornstein, Penrod, and McGorty's (2004) found that the effect of stress was twice as large for staged-crime studies than for studies manipulating stress by other means.

Cumulation of Effects

In studies were several factors are manipulated at one time it is regularly observed that they simultaneously influence witness performance. For example, Cutler, Penrod, O'Rourke and Martens (1986) found, across two studies, that disguise, biased instructions, weapon visibility, retention interval, and lineup size all influenced identification accuracy. Cutler, Penrod & Marten (1987a) found simultaneous effects of disguise, retention interval and mugshot viewing. Cutler, Penrod & Marten (1987b) found simultaneous effects for disguise, weapon focus, retention interval and instructions to witnesses.

Shapiro and Penrod (1986) analyzed performance across the hundreds of experimental conditions and found that even when statistically controlling for the effects of other variables most variables still explained significant portions of variability in performance. With regard to correct identification rates, attention variables and the duration of exposure per face were positively related to hit-rate performance. The number of targets studied and retention interval accounted for significant variance. With respect to identification errors, greater attention led to fewer false alarms, the number of targets studied was positively associated with false-alarm rates, there were many more false identifications when participants were confronted with live targets as opposed to still photographs and there was a negative correlation between the false-alarm rate and number of foils.

In short, there is substantial evidence that the effects of the many factors discussed above can and do have a cumulative effect on identification performance.

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